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[USSR]

Marine resources: a new commercial product

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ROCK GRENADIER

L.N. Pechenik and F.M. Troyanovskii,
Northern Commercial Intelligence.

Fish of the rat-tail or macrurid family (Macruridae) occur /7-I*
widely throughout the oceans of the earth and they are the most numerous of the marine fishes. There are about 300 marcurid species, more than 50 of which are to be found in the Atlantic.

Two species of macrurids turn up as an incidental catch in commercial perch and cod fishing: the roughhead grenadier (Macrurus berglax) and the rock grenadier (Macrurus rupestris) (Figure 1).

The roughhead grenadier forms commercial stocks at shelf depth, /7-II
but at the present time the commercial fishing of this species remains unorganized.

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*Translator's note: Numbers in the right-hand margin refer to the corresponding page and column in the Russian text.

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Figure 1: The grenadier

A: rock grenadier

B: roughhead grenadier

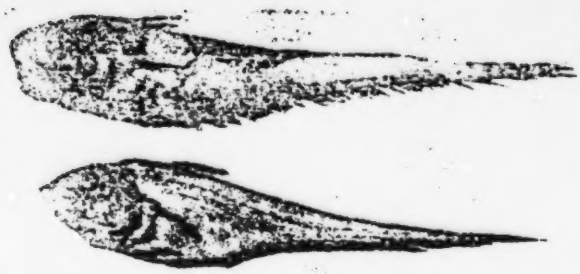


Figure 2: Echo-stock recording of accumulations of rock grenadier on the bottom at a depth of 700 to 850 m.

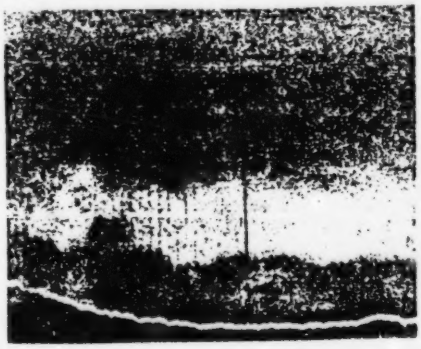
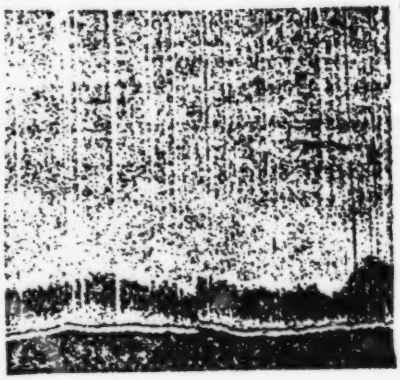


Figure 3: Echo-stock recording of accumulations of rock grenadier above the bottom (sea depth of 800 m).



The rock grenadier inhabits the northern Atlantic along the slope of the continental shelf.

In 1965-1968 Northern Commercial Intelligence carried out exploratory activities along the continental slope of the northwestern Atlantic in order to ascertain the possibilities for exploiting commercial stocks of rock grenadier and for utilizing this fish for comestible purposes.

Assisted by hydroacoustic apparatus and controlled trawling, a survey was made of the continental slope (depth: 500-1400 m) over a distance of approximately 1500 miles on the section extending from the northeastern slope of the Grand Banks of Newfoundland to Baffin Land.

In the initial stage of exploration (1965-1966) grenadiers were caught within the upper limit of its common area of occurrence (500-650 m), where this fish comes sporadically from greater depths for short periods. Its stocks were extremely mobile and they did not provide stable catches.

In 1967-1968 the exploration vessels successfully opened up the trawl fishing of rock grenadier at a depth of up to 1300 m. Thus, the take off Baffin Land at depths of 600-900 m amounted to 15,000 kg; to 12,000 kg off Labrador in one hour of trawling; and to 20,000 kg in the northern Newfoundland banks in 15 minutes of trawling.

Figure 2 shows the echo-stock [the stock of fish in a region as estimated by an acoustic survey--Tr.] of grenadier stocks at a depth of 700-850 m made with a "Kal'mar" hydroacoustic apparatus. /8-I

The exploratory activities that were performed identified localities with commercial stocks of rock grenadier along the explored portion of the continental shelf from the Newfoundland Grand Banks to

Baffin Land. The grenadier distribution that is shown is characteristic primarily of the second half of the year (June-December), when this part of the continental slope is free of ice.

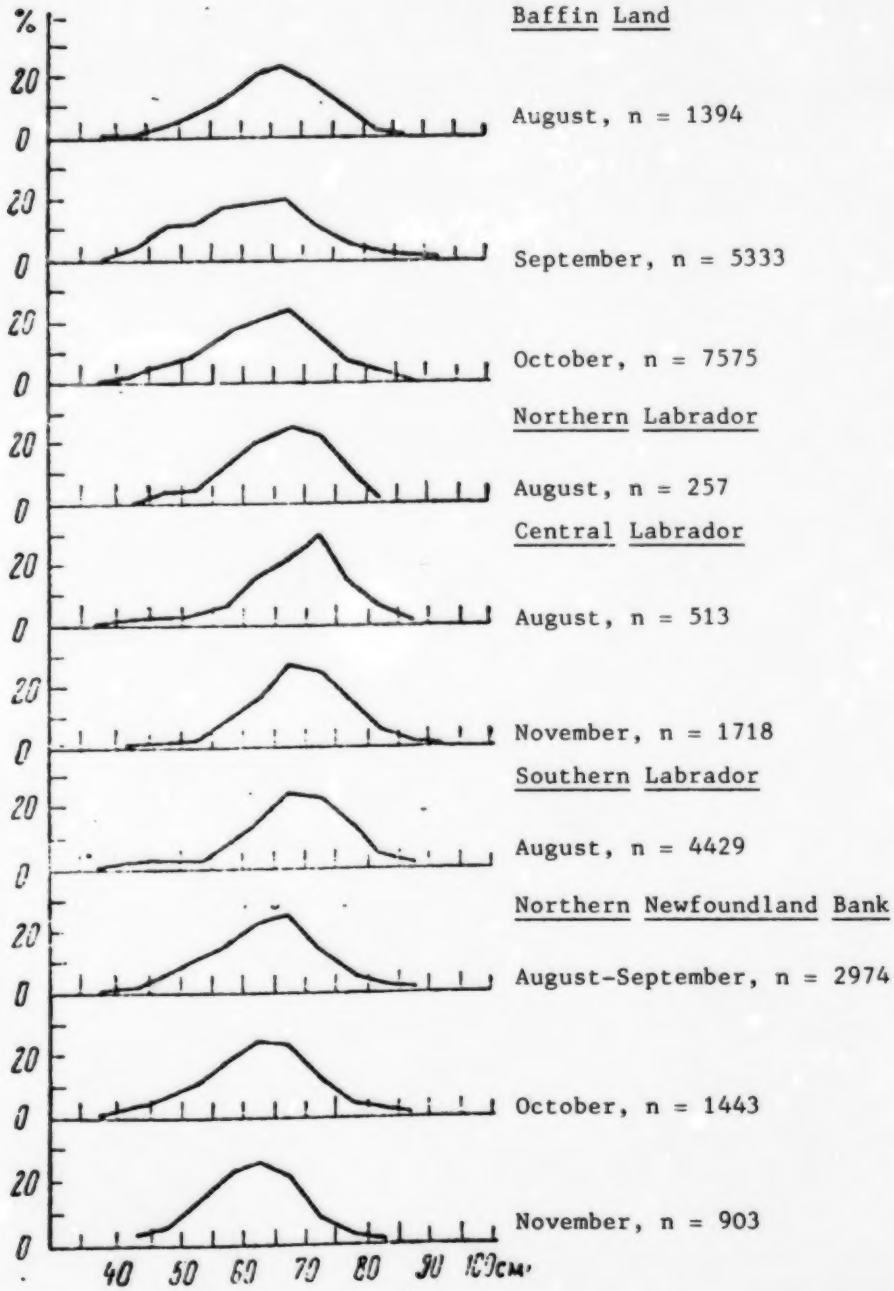
Dense grenadier stocks form each year at one and the same area of the continental slope, which is evidently due to the localized nature of its groupings, which are confined to certain environments of relief and bottom.

The grenadier does not carry out significant horizontal migrations. Observations have shown that the grenadier does not make regular vertical migrations; the fish ascends over the bottom at different times of the day and forms concentrations in the 100-120 m layer above the bottom (Figure 3).

The movement of grenadier at right angles to the slope, which was recorded at Baffin Land at a depth of 500-900 m and at the northern Newfoundland bank at a depth of 600-1300 m, is caused by migrations of their food supply. Consequently, catch sizes depend on the depth of trawling. /9-I

An examination of the grenadier's sexual glands showed that the fish taken in all areas at depths of 500-1400 m were either immature fish or else mature fish in the initial stage of maturation of genital products. The complete absence in the catches of individuals in the prespawning and spawning stages of maturity indicates that the explored section of the continental slope is the rock grenadier's growing area [the place where it spends the part of the year devoted to feeding and growing, as opposed to reproduction--Tr.]. Its spawning probably occurred at a depth greater than 1400 m.

Figure 4: The size composition of rock grenadier in different regions of the Northwestern Atlantic (data from 1967):



During the growing period the grenadier feeds on entomostracans--shrimp, amphipods, cumaceans, and to a lesser degree on cephalopod molluscs and lanternfishes.

Individuals with a length of 60-75 cm predominated in the catches of the exploration vessels (Figure 4).

Based on recommendations made by Northern Commercial Intelligence, large refrigerated fishing trawlers of the Murmansk Fleet participated in commercial grenadier fishing in September 1967 on the /9-II slope of the northern Newfoundland bank at a depth of 600-900 m. The 24-hour catch of some individual trawlers attained 70,000 kg.

In that same region in July and August 1968 a group of commercial refrigerated fishing trawlers from the Murmansk and Arkhangel trawling fleets became the first in international fishing experience to fish at depths of up to 1380 m. At the same time, the commercial fishing of grenadier commenced in the areas of Baffin Land and Labrador.

The Macruridae family is considered similar to the Gadidae; the chemical composition of the meat of the rock grenadier is as follows, (in percent) according to data from the Murmansk Fishing Combine: moisture, 84.78; protein, 13.59; fat, 0.97; and ash, 1.28.

The weight of the grenadier's liver relative to the weight of the undressed fish is 3.7 to 4.6 percent; the fat content of the liver is between 67 and 73 percent.

Consumers have recognized the good taste features of the rock grenadier.